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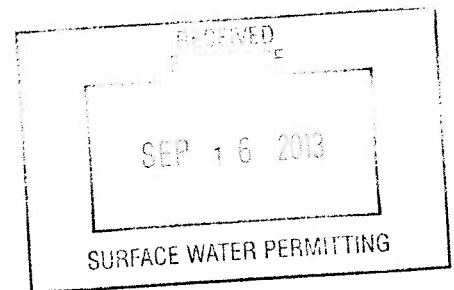
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September 11, 2013

Ms. Melisse Carasia Auriti, Supervising Environmental Specialist
NJDEP-Division of Water Quality Bureau of Surface Water Planning
P.O. Box 029
401 E State Street
Trenton, New Jersey 08625

Re: Passaic Valley Sewerage Commission
NJPDES Permit NJ0021016
85% Removal Waiver Request



Dear Ms. Carasia Auriti:

As you are aware, Passaic Valley Sewerage Commission ("PVSC") submitted to the New Jersey Department of Environmental Protection ("NJDEP") an application for a waiver of the 85% removal requirements for TSS and CBOD₅. As you are also aware, the United States Environmental Protection Agency ("USEPA") has concerns about PVSC's qualifications for the waiver as requested.

PVSC is re-submitting its original application, in accordance with N.J.A.C. 7:14A-12.3(b) & (c) with the attached additional information which is intended to respond to the specific comments provided to you by the USEPA in its letter dated September 21, 2011.

PVSC recognizes that some time has passed between the original request for the 85% Waiver and this response. The delay that was caused mainly by major changes in PVSC's staffing followed by the need to respond to damage caused by Superstorm Sandy. As a result of the passage of time, we have provided additional influent, effluent, and percent removal data covering the 24 months that preceded Sandy. We believe that the other data submitted with the original request still accurately responds to the information required under N.J.A.C. 7:14A-12.3(f).

EPA's Letter

40 CFR 133.103(a) and 40 CFR 103(e) establish the Federal criteria for granting wet weather

and dry weather waivers for facilities serving combined sewer systems. EPA analyzed the PVSC waiver application in terms of the federal regulations and questioned the adequacy of PVSC's documentation of the three requirements for obtaining a waiver.

EPA regulations provide:

To obtain an adjustment in the percent removal requirements... treatment works served by combined sewers must satisfy three conditions. First, the treatment works must consistently meet its permit effluent concentration limitations, but the percent removal requirements cannot be met due to less concentrated influent wastewater. Second, significantly more stringent effluent concentration than required by the concentration-based standards must be met to comply with the percent removal requirements and, third, the less concentrated influent wastewater must not result from either excessive infiltration or clear water industrial discharges to the system." 54 Fed. Reg. 4224, January 27, 1989.

PVSC will address each of the requirements under 40 CFR 133.103 (a) and (e) below.

1. "(1) The treatment works is consistently meeting, or will consistently meet, its permit effluent concentration limits, but the percent removal requirements cannot be met due to less concentrated influent wastewater.

- a. the treatment works must **consistently** meet its permit effluent concentration limitations

40 CFR 133.101 (f) Effluent Concentrations **consistently** achievable through proper operation and maintenance. (1) for a given pollutant parameter, the 95th percentile value for the 30-day average effluent quality achieved by a treatment works in a period of at least two years, excluding values attributable to upsets, bypasses, operational errors, or other unusual conditions...

Influent, effluent, and percent removal of CBOD₅ and TSS for the 24 month period prior to Superstorm Sandy (October 2010 – September 2012) can be found in Table 1. The 95th percentile of CBOD₅ was 20 mg/l compared to the permit limit of 25 mg/l and the 95th percentile of TSS was 24 compared to the permit limit of 30 mg/l. **Therefore, PVSC demonstrates that it satisfies this condition.**

- b. but the percent removal requirements percent removal requirements cannot be met due to less concentrated influent wastewater

- i. "The Administrator of the EPA has defined the requirements of secondary treatment for POTWs as the achievement of 30 mg/l BOD₅ and SS or 85% removal of those pollutants on a 30 day average, whichever is more stringent (40 CFR 133.102 (a) and (b)). These limits are based on what was previously believed to be typical POTW influent concentrations of 200 mg/l for BOD₅ and SS."(49 FR 37010, September 20, 1984). From Table 1, influent concentrations were less than 200 mg/l for 24 of listed 24 months for both TSS and CBOD₅. **Therefore, PVSC demonstrates that the POTW influent is less concentrated.**
- ii. Percent removal limits were not met for CBOD₅ for the months of February and March 2011 and February 2012. In February and March 2011, PVSC's effluent concentration for CBOD₅ was below the permitted concentration of 25 mg/l.

Percent removal limits were not met for TSS for the months February and March 2011 and February 2012. In February and March 2011, PVSC's effluent concentrations were below the permitted concentration of 30 mg/l. For February 2012, although the TSS exceeded its permit limit of 30 mg/l, it would have needed to be 23 mg/l to attain the removal requirement of 85%. **Therefore, PVSC demonstrates that the percent removal requirement cannot be met due to less concentrated influent wastewater.**

2. "(2) to meet the percent removal requirements, the treatment works would have to achieve significantly more stringent effluent concentrations than would otherwise be required by the concentration-based standards"
- a. § 133.101 (m) provides: "Significantly more stringent limitation means BOD₅ and SS limitations necessary to meet the percent removal requirements of at least 5 mg/l more stringent than the otherwise applicable concentration-based limitations (e.g. less than 25 mg/l in the case of the secondary treatment limits for BOD₅ and SS)..."
- i. From Table 1, significantly more stringent limitations were required for CBOD₅ for four months during the 24 months examined, or 16.7% of the months examined. **Therefore, PVSC demonstrates that significantly more stringent effluent concentrations than would otherwise be required would have to be achieved for CBOD₅**

- ii. From Table 1, significantly more stringent limitations were required for TSS for twenty four months during the 24 months examined, or 100% of the months examined. **Therefore, PVSC demonstrates that it would have required significantly more stringent effluent concentrations than would otherwise be required for TSS.**
- 3. “(3) the less concentrated influent wastewater does not result from either excessive infiltration or clear water industrial discharges during dry weather periods.
 - a. 40 CFR 35.2005 (b)(28) defines “nonexcessive infiltration” as “[t]he quantity of flow which is less than 120 gallons per capita per day (domestic base flow and infiltration) or the quantity of infiltration which cannot be economically and effectively eliminated from a sewer system as determined by a cost-effectiveness analysis”.
 - i. The total population for the PVSC district is estimated to be 1,421,044 (2009). The total flow for 2011 was 275.52 MGD. Major Industrial and commercial flow was 12.21 MGD. Therefore, domestic base flow plus infiltration was 263.31 MGD. Per capita per day flow was 185 gpcd. The per capita flow is greater than 120 gpcd threshold value in the regulation. Therefore, a determination must be made that the infiltration is non-excessive.
 - ii. Under EPA’s Construction Grant regulations (40 CFR 32.2005(b)(16), (28), (29), and 35.2120), grants for the construction of treatment works cannot be made unless an applicant has demonstrated that the sewer system is not, or will not be, subject to excessive I/I. Excessive I/I is determined from a cost effectiveness analysis that compares the costs of correcting the I/I conditions (plus the costs of transporting and treating the remaining I/I) to the total costs of the alternative—transporting and treating all of the I/I.

In order to determine whether there was excessive I/I in the system, a study and report “Infiltration/Inflow Analysis” was completed in 1976 (“Report Upon Infiltration/Inflow Analysis to Passaic Valley Sewerage Commissioners” Elson T. Killam Associates Inc., 1976, Construction Grant No. C340430-01-0). The report was completed before EPA issued Guidance manuals on conducting I/I studies and was guided only by the Construction Grant Regulations in 40 CFR 35.2120 and Appendix A to Subpart E of Part 35- Cost-Effectiveness Analysis Guidelines. The PVSC

I/I report assumed a 50% reduction in I/I for all I/I remediation measures.

Secondary Treatment Regulation: Availability of Comments and Additional Opportunities to Comment (49 FR 37010, September 20, 1984) stated, in 2. *Correction of Infiltration and Inflow (I/I)* “EPA initially believed that a substantial portion of the I/I problem (from 70 to 100 percent) could be corrected through cost effective sewer system rehabilitation. However, more recent information (“Evaluation on Infiltration/Inflow program”, draft technical reports, 1979, 1980) indicated that the available infiltration correction techniques are far less effective than originally predicted, and the actual portion of infiltration amenable to correction may be in a range from zero to 40%.

“The estimated I/I reductions made during SSES work are not realistic. They generally range from 70 to 100% and in reality achieve 0 to say 40% reductions”. (Evaluation of Infiltration/Inflow Program Final Report” USEPA, February 1981)

In addition, the report states “the transport and treatment costs utilized in the cost effectiveness analyses are generally rough estimates.” The PVSC report was completed after the plant was designed but before the plant was placed in service in 1981. The PVSC transport and treatment costs were likely estimated before the plant design was completed and therefore are judged to be rough estimates of actual costs.

The PVSC I/I Report was reviewed and several changes were made in its methodology to bring it into compliance with more recent guidance. The guidance used was “Principles and Requirements for Federal Investments in Water Resources” March 2013, “ OMB Circular A-4” 2003, “OMB Circular A-94, Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs” 1992, and “Guidelines for Preparing Economic Analyses”, National Center for Environmental Economics, USEPA December 2010.

The changes made to the 1976 Report are as follows:

1. The analysis is centered on infiltration only as section 133.103 (d) and (e) deal with dry weather periods
2. The percent reduction in I/I was reduced from 50% in the original report to a 40% reduction. Actual reductions were said to range from zero to 40% and thus the use of a 40% is a conservative selection.

3. The total cost of transporting and treating the I/I removed was calculated based upon guidance from OMB Circular A-94 Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs. The Circular states in Section 6. A. “(1) Incremental Benefits and Costs. Calculation of net present value should be based on incremental benefits and costs”. Costs were based on actual 2011 costs for the total incremental estimated savings that would result from the I/I reduction measures.

The PVSC sewer system is predominately a gravity flow sewer system. Two small areas of the district are serviced by remote pumping stations. For those areas, cost of transportation included the remote pumping station costs.

The total cost for treatment of infiltration is the cost of influent and effluent pumping at the POTW. Those costs were calculated on a cost per million gallons of infiltration basis.

4. I/I construction costs were escalated from 1976 to 2011 values by multiplying the 1976 costs by the change in the Construction Cost Index as published in Engineering News Record (ENR ratio). The 1976 Index was 2401 and the 2011 index was 9053 for a ratio in construction cost escalation of 3.771.

A spreadsheet recalculating the cost effectiveness of I/I reduction measures is attached as Table 2. **The results of the analysis show that reduction in I/I is not cost effective. Therefore, in accordance with the definition in 35.2005(b)(16), and 28, the infiltration in the PVSC system is non-excessive.**

- b. *Clear water industrial discharges during dry weather periods-* PVSC’s “Rules and Regulations Concerning Discharges to the PVSC Treatment Works” prohibit the discharge of clear water industrial discharges into the Treatment Works or Public Sewer. Subpart 2-Pretreatment Regulations, Section 312 Prohibited Industrial Wastes, §312.1 states “No person shall discharge or cause or allow to be discharged or deposited into the Treatment Works or public sewer, the following:

(j) Unpolluted Waters- Any Unpolluted water including, but not limited to, cooling water and uncontaminated storm water...”

PVSC's pretreatment program is inspected by the NJDEP and the USEPA. Therefore, the **less concentrated influent wastewater does not result from clear water industrial discharges during dry weather periods.**

EPA regulations provide:

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54 FR 4224, January 27, 1989.

Thus, PVSC has demonstrated that it has met all three requirements for a wet and dry weather waiver of the present removal requirements for CBOD₅ and TSS in its NJPDES Permit.

Should you require additional information please call me at (973) 817-5976.

Sincerely,

PASSAIC VALLEY SEWERAGE COMMISSION



Bridget M. McKenna
Chief Operating Officer

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Michele Putnam, Director of Water Quality, NJDEP
Pilar Patterson, Chief of Surface Water Permitting, NJDEP
Michael Urbanski, P.E., Plant Superintendent, PVSC
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